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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,719	06/05/2006	Toyohisa Tanaka	291507US2PCT	8556
22850	7590	08/21/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER JAMA, ISAAK R	
			ART UNIT 4163	PAPER NUMBER
			NOTIFICATION DATE 08/21/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/581,719	TANAKA, TOYOHISA	
	Examiner	Art Unit	
	ISAAK JAMA	4163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/05/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 5 is rejected under 35 U.S.C. 102 (e) as being anticipated by U. S. Patent Publication Number 2003/0228887 (Kishigami et al.).

2. Regarding claim 5, Kishigami teaches A radio communication apparatus that has first, second, third and fourth receiving antennas for receiving incoming radio waves, and carries out communication with mobile communication terminals (Figure 1), said radio communication apparatus comprising: a received beam generating section for generating first and second received beams which are perpendicular to each other (page 4, paragraph 0051) and spatially separated by assigning weights to received signals fed from the first, second, third and fourth receiving antennas (Figure 1, #s 11-1N) by using first and second received beam weights (Figure 1, # 4, Page 4, Paragraph 0051, 2nd column, lines 9-13) utilizing Fourier transform (Page 4, Paragraph 0054); a first signal arriving timing detecting section for measuring a received signal level using the first received beam fed from said received beam generating section (Page 4, Paragraph 0051, 2nd column, lines 24-27) and a known reference signal set for each of

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the individual mobile communication terminals (Figure 1, # 7, Page 4, Paragraph 0051, 2nd column, lines 14-16), and for outputting signal arriving timing information when the first received beam includes the reference signal (Figure 1, # 51); a second signal arriving timing detecting section for measuring a received signal level using the second received beam fed from said received beam generating section and a known reference signal set (Figure 1, output of block # 7) for each of the individual mobile communication terminals, and for outputting signal arriving timing information when the second received beam includes the reference signal (Page 4, Paragraph 0051, 2nd column, lines 16-18); and a demodulating section for receiving the first and second received beams from said received beam generating section (column 3, paragraph 0030), and for outputting demodulation data by performing maximal-ratio combining in response to the signal arriving timing information fed from said first and second signal arriving timing detecting sections (Figure 13, page 12, paragraph 0041).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Publication Number 2003/0228887 (Kishigami et al.) in view of U. S. Patent Publication Number 2005/0033165 (Ustuner et al.).

3. Regarding claim 6, Kishigami teaches a radio communication apparatus (Figure 1) wherein said received beam generating section assigns weights to the received signals fed from the first, second, third and fourth receiving antennas (Figure 1, # 4, Page 4, Paragraph 0051, 2nd column, lines 9-13) using the first received beam weight of a fixed weight (Page 1, paragraph 0011) to generate a first received beam (Page 1, paragraph 0006); and assigns weights to the received signals using the second received beam weight of a fixed weight to generate a second received beam which is orthogonal to the first received beam (page 1, paragraph 0011). In addition, Kishigami teaches that the direction of the orthogonal beam pattern is toward the null of another beam, with respect to a main beam direction of each beam (page 4, paragraph 0055; by definition, a null in the horizontal plane can be used to protect other transmitters from interference). But Kishigami fails to specifically teach that the major lobe in a certain direction and a grating lobe in a direction 180 degrees opposite to the certain direction. Ustuner teaches an adaptive grating lobe suppression method where for a received signal from a grating lobe direction, the beamformer forms the data representing a virtual element to cancel the energy, such as by adjusting a phase by 180°, and if the signal is predominantly from the main lobe direction, the phase of the data representing the virtual element is the same as the phase of the other elements, enhancing the main lobe energy upon beamformation (pages 5 & 6, paragraph 0040). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the grating lobe suppression of Ustuner in the path search circuit of Kishigami in order to accurately detect a desired signal.

Allowable Subject Matter

1. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. The following is a statement of reasons for indicating allowable subject matter:

Claim 7 recites "a radio communication apparatus further comprising: a feedback control section for outputting selection information by selecting a transmission beam to be transmitted in response to the signal arriving timing information fed from said first and second signal arriving timing detecting sections and to the phase difference between the first and second received beams fed from said demodulating section; and a beam-by-beam multiplexing section for receiving the transmission data of a plurality of users fed from said plurality of transmission signal processing sections, and for multiplexing the transmission data of the plurality of users on a transmission beam-by-transmission beam basis in response to the selection information fed from said feedback control section". The recited limitations are not taught or suggested by the prior art.

3. As to claim 8, depends on claim 7 which the examiner indicated above as containing allowable subject matter.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S Patent Number 7,263,385 (Gurelli et al.) teaches a system and method for beamforming with data rate control feedback. U.S Patent Number

7,274,951 (Maruta) teaches a multi-beam antenna transmitter/receiver and transmitting/receiving method and transmission beam selection method. U.S Patent Number 7,263,385 (Matsuoka et al.) teaches a radio communication apparatus using adaptive antenna. U.S Patent Publication Number 2005/0101352 (Logothetis et al.) teaches a method and apparatus for a multi-beam antenna system. U.S. Patent Number 5,585,803 (Miura et al.) teaches an apparatus and method for controlling array antenna comprising a plurality of antenna elements with improved incoming beam tracking. U.S. Patent Number 6,414,631 (Fujimoto) teaches a time sharing type multi-beam radar apparatus having alternately arranged transmitting antennas and receiving antennas.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ISAAK JAMA whose telephone number is (571)270-5887. The examiner can normally be reached on 7:30 - 5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Robinson can be reached on (571) 272-2319. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/IRJ/

/Mark A. Robinson/
Supervisory Patent Examiner, Art Unit 4163